TRANSACTIONS
OF THE
ROYAL SOCIETY OF NEW ZEALAND

ZOOLOGY

VOL. 10 NO. 22 AUGUST 23, 1968.

A Description of a New Species of Terrestrial Amphipod (Fam. Talitridae) from New Zealand

K. W. DUNCAN,

University of Canterbury, Christchurch

[*Received by the Editor, October 16, 1967.*]

Abstract

A DESCRIPTION is given of *Orchestia hurleyi* (Fam. Talitridae), a grass-land dwelling amphipod. The species is notable for the reduction of secondary sexual characters in the male.

INTRODUCTION

THIS species was discovered by the author while considering the value of pigmentation patterns for the field identification of terrestrial amphipods. In spite of its great abundance, it had been overlooked by previous workers probably because of the similarity of the male to the female. Female terrestrial amphipods, considered alone, are difficult to identify at the species level and so great reliance must be placed on the males for initial sorting and identification. It becomes very difficult, however, to recognise a species when both the male and the female closely resemble the females of a number of other species. This difficulty can be removed if characters other than the traditional taxonomic ones are used for initial sorting. Pigmentation pattern is one of the more valuable in this context. Though impermanent in preserved material, these patterns are both distinctive and species specific.

This study was carried out while the author was the recipient of a University Grants Committee Research Grant.

Family TALITRIDAE

Genus ORCHESTIA Leach

Orchestia Leach, 1813-14: 402; Stebbing, 1906: 503; Hurley, 1957: 149.
Parorchestia Stebbing, 1899: 402; Stebbing, 1906: 557; Shoemaker, 1942: 17.

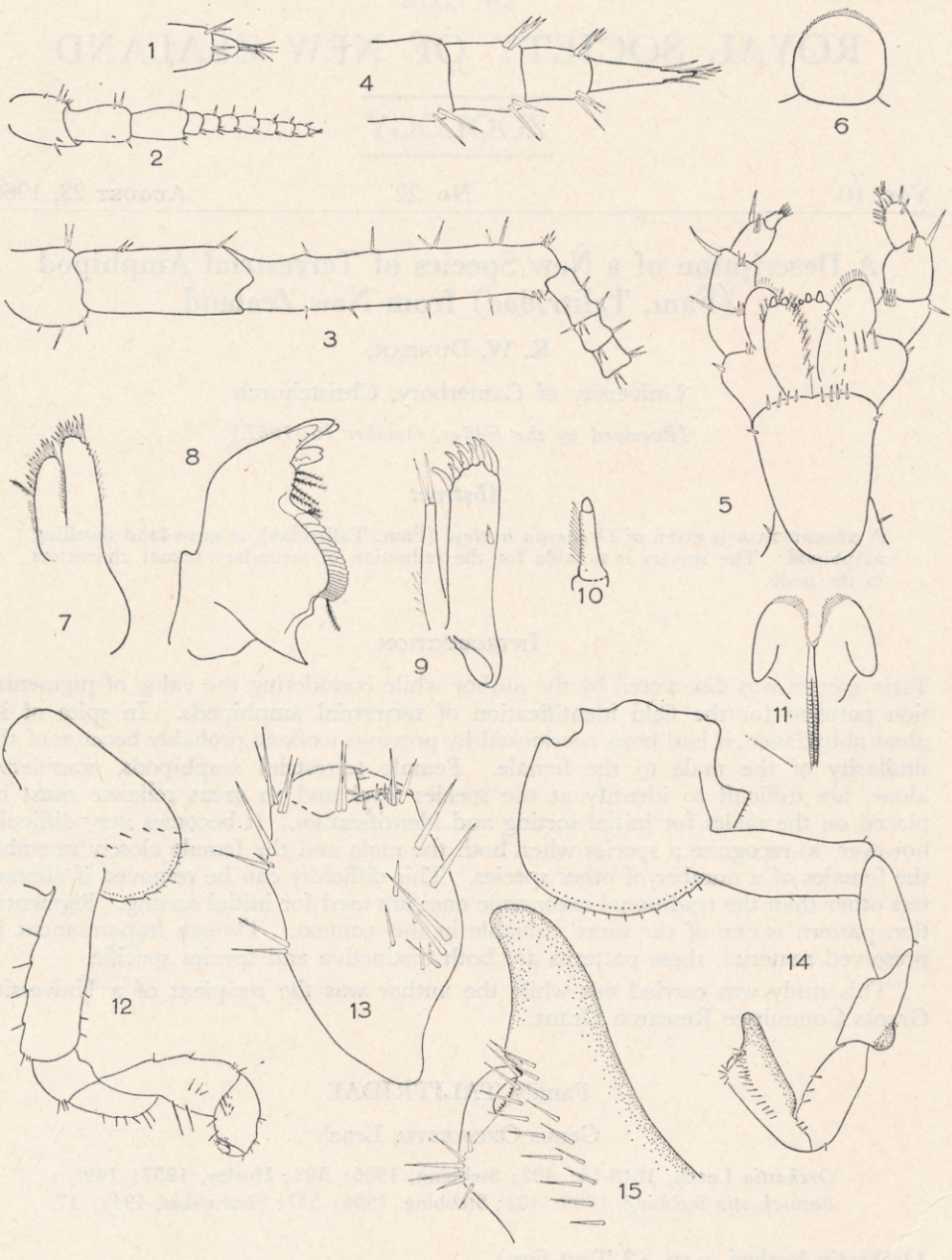
Orchestia hurleyi, n.sp. (2 Text-figs.)

COLOUR IN LIFE: Brownish-red background with darker brown annulations. Males with patch of brown (red in spirits) on segments 5 and 6 of first gnathopod.

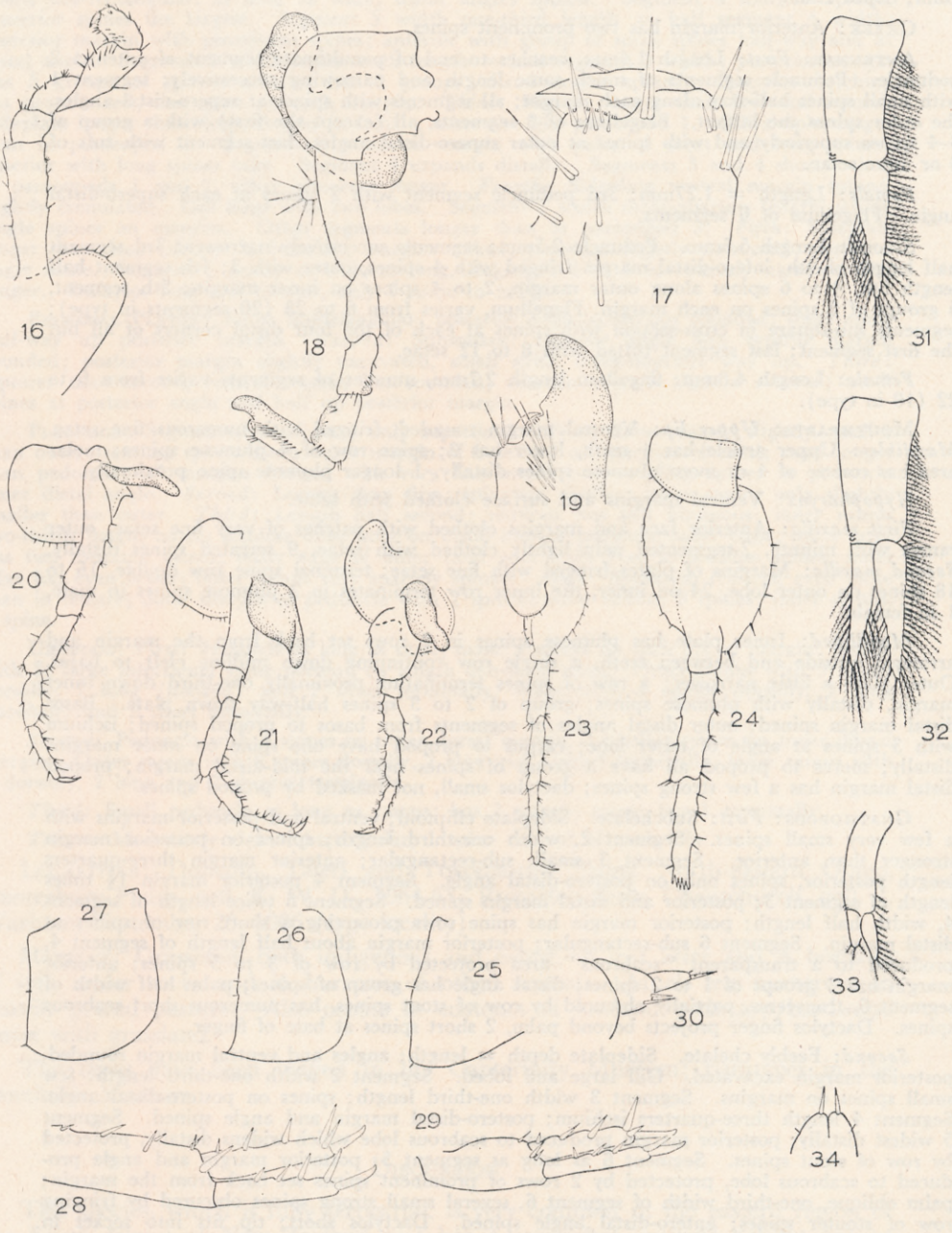
COLOUR IN SPIRITS: Background of yellowish-white with red annulations.

EYES: Black, round; diameter (0.035mm) one-third head diameter.

Published by the Royal Society of New Zealand, c/o Victoria University of Wellington, P.O. Box 196, Wellington.



Text-fig. 1.—*Orchestia hurleyi* n.sp. 1, Tip of antenna 1, ♂. 2, Antenna 1, ♂. 3, Antenna 2, ♂. 4, Tip of antenna 2, ♂. 5, Maxilliped. 6, Upper lip. 7, Maxilla 2, ♂. 8, Mandible. 9, Maxilla 1. 10, Maxilla 1 palp. 11, Lower lip (salivary lobes). 12, Gnathopod 1, ♂. 13, Gnathopod 1, ♂, segment 6 and 7. 14, Gnathopod 2, ♂. 15, Gnathopod 2, ♂, segment 6 and 7.



TEXT-FIG. 2.—*Orchestia hurleyi* n.sp. 16, Gnathopod 1, ♀. 17, Gnathopod 1, ♀, segment 6 and 7. 18, Gnathopod 2, ♀. 19, Gnathopod 2, ♀, segment 6 and 7. 20, Peraeopod 1, ♂. 21, Peraeopod 2, ♂. 22, Peraeopod 3, ♂. 23, Peraeopod 4, ♂. 24, Peraeopod 5, ♂. 25, Epimeral plate 1. 26, Epimeral plate 2. 27, Epimeral plate 3. 28, Uropod 1, ♂. 29, Uropod 2, ♂. 30, Uropod 3, ♂. 31, Pleopod 1, ♀. 32, Pleopod 2, ♀. 33, Pleopod 3, ♀. 34, Telson.

LENGTH OF MALE: 10mm; width 2.5mm; depth 2mm. FEMALE: Length 12mm; width 3mm; depth 2mm.

CHEEK: Anterior margin has two prominent spines.

ANTENNAE: *First*: Length 1.4mm, reaches to end of penultimate segment of antenna 2 peduncle. Peduncle segments of much same length and narrowing successively; segment 1 with small spines half-way along each margin; all segments with spines at supero-distal angles, the outer spines the largest. Flagellum of 8 segments, all (except the first) with a group of 3–4 spines superiorly and with spines at outer supero-distal angles; last segment with tuft of 4 or more setae.

Female: Length = 1.27mm; 3rd peduncle segment with 2 spines at each supero-distal angle. Flagellum of 6 segments.

Second: Length 5.5mm. Peduncle 2.5mm; segments successively narrower; 3rd segment half length of 4th, infero-distal margin fringed with 4 spines, outer with 3; 4th segment half length 5th, 4 to 6 spines along outer margin, 2 to 4 spines on inner margin; 5th segment, 5 groups of 2 spines on each margin. Flagellum, varies from 6 to 23 (20 segments in type); segments sub-square in cross-section with spines at each of the four distal corners of all but the first segment; last segment tufted with 8 to 12 setae.

Female: Length 4.8mm; flagellum length 2.7mm, number of segments varies from 6 to 22 (18 in type).

MOUTHPARTS: *Upper lip*: Ventral margin rounded, fringed with numerous fine setae. *Mandibles*: Upper article has 4 teeth, lower has 3; spine row of 4 plumose spines; molar area has rosette of 4 or more plumose spines distally, 1 longer plumose spine proximally.

Hypopharynx: Ventral margins and surface clothed with setae.

First maxilla: Anterior face and margins clothed with patches of very fine setae, outer ramus with minute, 2-segmented palp lightly clothed with setae, 9 serrated spines distally. *Second maxilla*: Margins of plates fringed with fine setae; terminal spine row double, 16 to 18 spines on outer lobe, 24 on inner, the inner row terminates in 2 plumose spines in male, 1 in female.

Maxilliped: Inner plate has plumose spines in 2 rows set back from the margin and arranged outside and between teeth, a single row continuing down midline cleft to basos. Outer plate a little narrower: a row of spines terminating proximally one-third down inner margin, distally with plumose spines; group of 2 to 3 spines half-way down plate. Basos distal margin spined; outer distal angles of segments from basos to propod spined; ischium with 3 spines at angle of outer lobe; carpus to propod have one spine on inner margins distally; merus to propod all have a group of spines near the mid-distal margin; propod distal margin has a few strong spines; dactylos small, not masked by propod spines.

GNATHOPODS: *First*: Subchelate. Sideplate elliptoid; ventral and posterior margins with a few very small spines. Segment 2, width one-third length; spines on posterior margin stronger than anterior. Segment 3 small, sub-rectangular; anterior margin three-quarters length posterior, spines only on postero-distal angle. Segment 4 posterior margin 1½ times length of segment 3; posterior and distal margin spined. Segment 5 twice length of segment 4, width half length; posterior margin has spine rows protecting a short row of spines at distal margin. Segment 6 sub-rectangular; posterior margin about half length of segment 4, produced to a transparent "scabrous" area protected by row of 3 to 5 spines; anterior margin has 3 groups of 1 to 2 spines; distal angle has group of spines; palm half width of segment 6, transverse, partially obscured by row of stout spines, has numerous short scabrous spines. Dactylos finger projects beyond palm, 2 short spines at base of finger.

Second: Feebly chelate. Sideplate depth = length; angles and ventral margin rounded, posterior margin excavated. Gill large and lobed. Segment 2 width one-third length; few small spines on margins. Segment 3 width one-third length; spines on postero-distal angle. Segment 4 length three-quarters ischium; postero-distal margin and angle spined. Segment 5 widest distally; posterior margin produced to scabrous lobe which widens distally, protected by row of stout spines. Segment 6 as long as segment 5; posterior margin and angle produced to scabrous lobe, protected by 2 rows of prominent spines set back from the margin; palm oblique, one-third width of segment 6, several small strong spines obscured by fringing row of stouter spines; antero-distal angle spined. Dactylos short; tip fits into socket in segment 6 lobe.

Female: Sideplate deeper than long, spines more numerous. Broodplate length 5 times width; ends in 9 spines, each longer than width. Segment 2, anterior margin only spined. Segment 4 posterior margin produced into scabrous lobe; spines down posterior margin and at distal angle. Segment 5, posterior and distal margin spined, produced in scabrous lobe. Palm of segment 6 more oblique than male. Dactylos relatively shorter.

PERAEOPODS: *First*: As long as peraeopod 2. Gill simple, sac-like. Sideplate ventral margin rounded and spined; posterior margin excavated, spined; deeper in female than male.

Segment 2 widening distally; spined marginally and at angles; length 5 times width. Segments sub-rectangular, as long as wide; distal angles spined. Segment 4 margins spined, posterior spines the largest. Segment 5 width one-third length = half segment 4 width; posterior margin with prominent spines; anterior with group of small spines half-way and at distal angle. Segment 6 width one-seventh length = halt segment 5 width; posterior margin has 5 groups of spines, anterior has 3 groups; distal angles spined. Dactylos notching not pronounced; one spine on each margin. *Third*: Slightly longer than first and second. Sideplate longer than deep, deeper in female, otherwise like peraeopod 1. Gill simple, larger than in peraeopod 2. Segment 2 posterior margin with pairs of short and long spines; anterior with long spines only. Segment 4 expands distally. Segments 3 and 4 shorter than in peraeopods 1 and 2, other segments longer. *Fourth*: Sideplate ventral margin spined, slightly crenulated. Gill large with two lobes. Segment 2 width three-quarters length, strong single spines on margins. Other segments longer than in peraeopod 3. *Fifth*: Sideplate longer than deep (deeper in female); margins spined; posterior slightly excavated; posterior angle acute. Segment 2 nearly as wide as long. Segments 4 to 6 successively narrower and longer. Dactylos long and narrow, only 1 spine in axilla.

EPIMERAL PLATES: *First*: Subtriangular; posterior angle acute but rounded; small spine half-way up posterior margin. *Second*: Subsquare; anterior angle and ventral margin rounded; posterior margin slightly excavated, small spine three-quarters way up. *Third*: Squarer than second, ventral margin less rounded; anterior margin slightly sinuous; small spines at posterior angle and half up posterior margin.

PLEOPODS: Segmentation of rami only superficial. *First*: Inner ramus slightly smaller than outer; setulose spines down outer margin of base and all margins of rami; rami longer than peduncle; all margins fringed with very fine setae; two coupling spines at peduncle inner distal angle. *Second*: Longer than first; spination similar; inner ramus only slightly smaller than outer. *Third*: Length half second; reduced but still biramous; inner ramus two-thirds length outer; setulose setae only on distal half of peduncle outer edge; inner edge has two coupling spines; outer edge of outer rami with only 7 or so setulose spines, inner edge has even fewer; outer ramus very sparsely spined. *Male*: Spination reduced even more than in female; outer margin of peduncle with 2 spines; outer ramus, 3 spines; inner ramus, 1 spine.

UROPODS: *First*: Peduncle as long as rami; male, 4 spines on each dorsal margin; female with 5; large interramal spine present, its length one-third rami. Outer ramus with 3 spines dorsally, 1 long (hooked) and 2 short terminally; inner with 4 spines dorsally, 2 long (hooked) and 2 short terminally.

Second: Peduncle with 4 spines on outer dorsal margin, 2 smaller spines on inner dorsal margin. Outer ramus with 2 spines dorsally, 2 long and 2 short terminally; inner ramus with 3 dorsally, 2 long and 2 shorter terminally.

Third: Small peduncle as long as ramus; has 2 spines; ramus has 1 terminally.

Telson: Moderately cleft, subtriangular, 1 spine on end of each lobe.

LOCALITIES: Dunedin, Taieri and Tokomairiro Plains, North-eastern Otago, Canterbury Plains, coll. K. W. D., 1964-67; Riccarton Bush, Christchurch, coll. J. Warham, September 23, 1966 (type locality).

HABITAT: Grassland, both indigenous and exotic, in leaf litter and A horizons of soil, under rocks and in burrows of other animals. Much less numerous in heavily grazed pasture. Also occurs in ecotones of lowland podocarp/hardwood forest with grassland.

The types have been lodged in the Canterbury Museum; paratypes in the Dominion Museum.

DISCUSSION

This species, which is fully terrestrial, is very common in the eastern region of the South Island of New Zealand and has a somewhat unusual habitat for an amphipod. It appears to have adjusted to the new ecological conditions induced by agriculture.

The males can be distinguished from females by their smaller size, larger second antennae, different first uropod spination, lack of brood plates, shallower sideplates and the presence of a patch of pigmentation on the carpus and propod of the first gnathopod.

In Hurley's (1957) key to the New Zealand species of *Orchestia* this species keys out in the section: *sinbadensis, tenuis, maynei* and *insularis* and comes closest to *sinbadensis*. It can be distinguished from *sinbadensis* by pigmentation pattern (*sinbadensis* is reticulated), telson and uropod spination, and the length of antenna 1 relative to antenna 2 peduncle.

The author has named the species after Dr D. E. Hurley, in recognition of his work on Crustacean taxonomy.

Further information on the ecology, physiology and pigmentation of this and other species of the same genus, will be published on another occasion.

LITERATURE CITED

LEACH, W. E., 1913–14. Article: Crustaceology and Appendix. Edinburgh Encyclopedia, 7: 383–437, pl. 221.

HURLEY, D. E., 1957. Terrestrial and littoral amphipods of the genus *Orchestia,* Family Talitridae. *Trans. R. Soc. N.Z.,* 85(1): 149–199, 18 Text-figs.

SHOEMAKER, C. R., 1942. Amphipod crustaceans collected on the presidential cruise of 1938. *Smithson. Misc. Coll.,* 101, Art. II (3677); 1–52, Text-figs. 1–17.

STEBBING, T. R. R., 1889. Amphipoda from the Copenhagen Museum and other sources. Part II. *Trans. Linn. Soc. Lond.,* Zool., (2), 7(8): 395–432, Pls. 30–35.

——— 1906. Amphipoda Gammaridea. *Das Tierreich,* Vol. 21: xxxix + 806 pp., 127 figs.

K. W. DUNCAN,
University of Canterbury,
Private Bag,
Christchurch,
New Zealand.